Effect of heat removal on tubular solar desalting system

ABSTRACT

The technological process integration will influence directly on the energy efficient conversion with vital role on system productivity. In this work, an attempt was made to investigate on the performance of a compound parabolic concentrator-concentric tubular solar still (CPC-CTSS) coupled with a single slope solar still. A set of 2 m long concentric tubes with rectangular basins of the same length was fabricated (2 m2 area) and the entire experimental setup was operated with cold water flow over the inner tubes of the concentric arrangement. This pre-heated water was fed to a single slope solar still. The area of the single slope solar still was 0.25 m2 and the glass had an angle of 11° from the horizontal. It was clearly observed that the yield strongly depends on the evaporative heat transfer coefficient. It was concluded that, to increase the distillate augmentation to overnight, phase change material was additionally incorporated in the single slope solar still.

Keyword: Compound parabolic concentrator; Single slope solar still; Tubular solar still; Phase change material